



Global views

Sexual co-transmission of HIV, hepatitis B, and hepatitis C viruses

Introduction

The spread of human immunodeficiency virus (HIV) infection has reached pandemic proportions. Hepatitis B (HBV) and hepatitis C (HCV) viruses, although predominantly blood borne can also be transmitted sexually with several studies pointing towards enhanced spread of HCV along with HIV. We have not come across any study in India that has studied the interrelation of these viruses.

Materials and methods

A total of 270 patients attending the STD clinic of JIPMER, Pondicherry, India, were randomly included in the study irrespective of age and sex. A detailed examination was done to rule out any underlying STD. All the patients were screened for syphilis (VDRL), HIV infection (enzyme immunoassay for detection of antibodies to HIV-1, HIV-1 group 0 and HIV-2), HBV infection (reverse passive haemagglutination for detection of HBsAg), and HCV infection (enzyme immunoassay for detection of antibodies to HCV). The results were analysed statistically using the χ^2 test.

Results

Of the 270 patients, the male to female ratio was 4.9:1. The maximum number of patients were in the age group of 21–40 years (mean age 32.07 years). The married to unmarried ratio was 3.15:1. A total of 63 patients (23.2%) were seropositive for HIV, 27 (10%) for HBsAg, and 57 (21.1%) for HCV. There were significant associations between HIV and HCV seropositivity ($p < 0.001$), HIV and HBsAg positivity ($p < 0.001$), and HCV and HBsAg positivity ($p < 0.05$) (table 1).

Discussion

The HIV positivity rate in our study is similar to the previously reported rate of 23.52% in 1997 from the same STD centre.¹ The HBsAg and HCV positivity rate was higher than that reported among STD clinic attend-

ees in Pune by Tungatkar *et al*² who reported a positivity rate of 5.78% and 0.64% respectively. The HCV positivity rate was also higher than that seen in STD clinics in the United Kingdom (2.2% in homosexual men and 0.4% in heterosexuals), Denmark (1.4% in homosexual men), Italy (6.9% in homosexual men), and Japan (6.2% in female prostitutes).³ The high HCV positivity may be due to more efficient sexual transmission (associated with coexistent genital ulcer disease) in this population or it may be due to the accompanying HIV infection which has

shown to increase the efficiency of sexual transmission of HCV.⁴

The strong interactions between the three viral infections seen in this study is in concordance with study of Thomas *et al*⁵ who found that males with any one serological marker (anti-HCV, anti-HIV, and anti-HBc) were more likely to have each of the other markers and females with anti-HIV or anti-HBc were more likely to have anti-HCV (fig 1).

We compared our data with the positivity of the three markers in the general population and in blood donors, The HCV, HBsAg, and HIV seropositivity rates in our study on STD clinic attendees were 4.39 times (general population), 2.6 times (blood donors), and 62 times (blood donors) respectively. Thus, our study documents a definite role of sexual transmission in the spread of HIV, HBV, and HCV with HIV having the highest potential for sexual transmission followed by hepatitis C and hepatitis B viruses.

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Table 1 Positivity and associations between HIV, HBV, and HCV infections

Serological markers	Positivity
HIV	63 (23.2%)
HBsAg	27 (10%)
HCV	57 (21.1%)
HIV+HBsAg	13
HIV+HCV	40
HCV+HBsAg	10
HIV+HCV+HBsAg	10

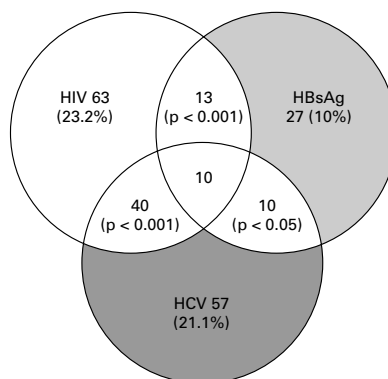


Figure 1 Interaction of HBV, HIV, and HCV infection in patients attending a clinic for sexually transmitted infections.

- 1 Thappa DM, Singh S, Singh A. HIV infection and sexually transmitted diseases in a referral STD centre in south India. *Sex Transm Inf* 1999;75:191.
- 2 Tungatkar SP, Divekar A, Arankalle UA. Exposure of STD patients and prisoners from Pune to hepatitis B and hepatitis C viruses. *Ind J Med Microbiol* 1997;15:117–19.
- 3 Rooney G, Gilson RJC. Sexual transmission of hepatitis C virus infection. *Sex Transm Inf* 1998;78:399–404.
- 4 Eyster MC, Alter HJ, Aledort LM, *et al*. Heterosexual co-transmission of hepatitis C virus and human immunodeficiency virus. *Ann Intern Med* 1991;115:764–8.
- 5 Thomas DL, Canon RO, Shapiro CN, *et al*. Hepatitis C, hepatitis B and human immunodeficiency virus infections among non-intravenous drug using patients attending clinics for sexually transmitted diseases. *J Infect Dis* 1994;169:990–5.